

REMARKS

Claims 1-24 are all the claims pending in the application. Claims 7-9, 13-15, and 18-24 have been withdrawn. Claims 1-6, 16 and 17 have been canceled without prejudice or disclaimer. Claims 10-12 have been amended herein.

Preliminary Matters-

Applicants wish to thank the Examiner for acknowledging and entering the Election of Species filed on September 27, 2007. Applicants duly affirm the election.

Summary of Office Action

The Examiner has made several prior art rejections. Specifically, the rejections are as follows:

1. Claims 1, 4-6, 10 and 17 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Glinz (U.S. 6,672,349) and further in view of Rathke (U.S. 5,826,320).
2. Claims 1, 2, 10-12, and 17 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Morinaga (JP 2002234304) and further in view of Rathke.
3. Claims 1, 2, 4, 5 and 10-12 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Dieckmann (U.S. 6,619,350) in view of Glinz and Rathke.
4. Claim 3 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Glinz and Rathke as applied in claim 1 above and further in view of Wehner (U.S. 5,868,023).

5. Claim 16 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over either one of (a) Glinz and Rathke, (b) Morinaga and Rathke, or (c) Dieckmann, Glinz, and Rathke, as applied in claim 10 above and further in view of Matsuo (JP 05016143).

Applicants' Response

Claims 1-6 and claim 17 have been cancelled herein and therefore, all rejections of these claims are now moot. Claims 10 and 12 have been amended herein to include the features of claim 16, which has been duly cancelled. None of the cited references discloses or even remotely suggests the patentable features of claim 16, now incorporated into claims 10 and 12, wherein when the aluminum tube is deformed to expand, "air intervening between the aluminum tube and the forming jig is discharged to the exterior through the exhaust holes" provided in the forming Jig.

On page 6 of the current Office Action, the Examiner acknowledges that Rathke fails to teach exhaust holes or vent holes as recited in claim 16, now incorporated into claims 10 and 12. Further, the Examiner asserts that such a structure is extensively used in a wide variety of molding operations in order to remove air trapped between the mold and the article being formed, as shown for example by Matsuo. However, the exhaust holes disclosed in Matsuo are completely different from the Exhaust holes of the present invention.

More specifically, the exhaust holes of Matsuo are provided to forcibly discharge air trapped in a mold by a negative pressure pump, thereby maintaining the interior of the mold under a negative pressure condition when vulcanization molding of rubber is carried out. In contrast, the exhaust holes of the present invention are provided to discharge air intervening

between the aluminum tube, which is electromagnetically subjected to instantaneous plastic deformation, and the forming jig.

Further, the exhaust holes of the present invention have the effect of preventing the formation of the shell from being adversely affected due to air intervening between the aluminum tube, which is electromagnetically subjected to instantaneous plastic deformation, and the forming jig by discharging the intervening air. This effect is not disclosed or even suggested in any of the cited references.

Matsuo uses a negative pressure pump to remove the air between the mold and the material being molded. In order to establish a negative pressure, a hermetically sealed condition must be formed. In the present invention, an aluminum alloy is used as a shell forming material and an aluminum alloy does not have elastic properties like the rubber used in Matsuo. Further, even if a good seal can be formed between the aluminum alloy and the mold, the hermetically sealed condition cannot be maintained, without tremendous effort, when deformation is instantaneously caused as occurs in the present invention.

In contrast, it can be understood that the present invention provides a method in which the need to establish a hermetically sealed condition (a negative pressure condition) between the material and the mold is eliminated because the plastic deformation is created using a strong electromagnetic force. Therefore, Applicants respectfully submit that the exhaust holes of Matsuo intrinsically cannot be applied to the method of the present invention and respectfully request that the rejection of claims 10 and 12 be withdrawn.

Further, claim 11 depends from claim 10 which has been shown above to be patentable over all the references cited by the Examiner. Therefore, Applicants respectfully submit that

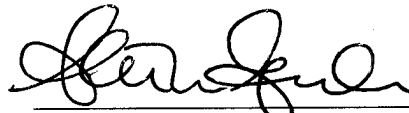
claim 11 is patentable at least by virtue of its dependency and respectfully request that the rejection of claim 11 be withdrawn as well.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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